

- c) growing said cells in said matrix *in vitro*, until a tissue-engineered biograft is formed, comprising a contracting tissue; and
- d) transplanting the tissue-engineered biograft onto the myocardial tissue or myocardial scar tissue of said mammal, optionally previously removing scar or dead tissue from the site of implantation;

wherein the mammalian cells are selected from the group consisting of fetal cardiomyocytes, neonatal cardiomyocytes, adult cardiac cells, fibroblasts, smooth muscle cells, endothelial cells, skeletal myoblasts, mesenchymal stem cells and embryonic stem cells; and wherein said polysaccharide matrix further comprises controlled-release polymeric microspheres, said microspheres being capable of releasing soluble angiogenic growth factors in a controlled manner.

Please amend claims 16 as follows:

16. (AMENDED) A tissue-engineered cardiac biograft for transplantation into myocardial tissue or myocardial scar tissue, comprising:

a porous polysaccharide matrix comprising controlled-release polymeric microspheres capable of releasing soluble angiogenic growth factors; and
mammalian cells selected from the group consisting of fetal cardiomyocytes, neonatal cardiomyocytes, adult cardiac cells, fibroblasts, smooth muscle cells, endothelial cells, skeletal myoblasts, mesenchymal stem cells and embryonic stem cells;

wherein said cells have been cultured in said matrix *in vitro*.

Please amend claim 19 as follows:

19. (AMENDED) A method of preparing a three-dimensional tissue-engineered biograft comprising:

- a) providing a porous polysaccharide matrix comprising microspheres capable of releasing soluble angiogenic growth factors; and
- b) co-culturing the porous polysaccharide matrix *in vitro* with mammalian cells selected from the group consisting of fetal cardiomyocytes, neonatal cardiomyocytes, adult cardiac cells, fibroblasts, smooth muscle cells, endothelial cells, skeletal myoblasts, mesenchymal stem cells

and embryonic stem cells, until a cardiac-like tissue is formed, comprising a tissue-engineered biograft.